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Structural control on the distribution of Eocene progradional units and deep water fans in the NW Faroe-Shetland Basin – implications for hydrocarbon exploration

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In this study the post-basalt strata in the Faroese area have been investigated based on interpretation of 2D and 3D reflection seismic data. The post-basalt package is divided into 5 units which have led to the constructions of 6 structural maps and 5 thickness maps in TWTT. Within the 5 units 12 prograding and basin floor fans (sub-units) have been identified. Based on the interpretation of the seismic profiles and maps it is possible to obtain an overview during time of the location of depocentres and input direction of sub-units as the results of an interplay between uplift, subsidence and compression.

During Cenozoic time sediment input directions and placement of depocentre varies. During Eocene time the influx mostly is from south and southwest where the depocentre is in the central part of the basin. During Oligocene to Pliocene time the sediment input direction is from north and northwest and the depocenter has moved in a westward direction closer to the Faroe Platform area.

However, the actual distribution of sediments appears to be controlled by re-activation of older, Mesozoic, structural elements controlling the sediment path way and restricting the depositional areas. Different elements being re-activated at different times causing considerable structural complexity. Understanding older, Mesozoic, structural elements control on sedimentation is a potential tool understanding deviations from “normal” thermal subsidence and for predicting the prospectivity in post-rift succession in the Faroe-Shetland Basin.

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